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ABSTRACT

Demographic forecasters predict that fewer young workers will be entering the work force at the turn of the century, with women, minorities, and immigrants constituting five-sixths of the net additions to the labor force. Since these groups generally have comparatively low educational levels, the labor pool of the near future will be characterized as having lower literacy levels than at present. Future job requirements are difficult to predict. Not only are the predictions contradictory, but researchers are hampered by methodological problems and limitations of existing databases. Employers' and managers' attitudes toward basic skills in the workplace and the extent of the literacy problem vary widely, although the general view is that basic skills instruction is beneficial to business and employees. The studies that have examined the relationship between literacy and job performance have documented the positive correlation between the two. Basic skills deficiencies have been linked to a variety of costs, including increased training costs, productivity losses, and the inability of basic skills-deficient workers to find new employment after becoming dislocated. To meet employer and employee needs for training that enhances productivity, basic skills instruction must promote an integration between vocational and academic learning. (Document includes a seven-page bibliography.) (MN)

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LITERACY AND JOB PERFORMANCE: A PERSPECTIVE

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This monograph is dedicated to the continued efforts of the Pennsylvania State Coalition for Adult Literacy and its funding agent the Gannett Foundation, establishing leadership in adult literacy. The Coalition of business/industry, labor, government, media, community and educational organizations, adult learners, and literacy service providers is working to improve the quality of our communities and the productivity of the Commonwealth.

Preface

Workforce basic skills instruction is an emergent area of concern for literacy providers, program planners, and community leaders. What is known about relationships between literacy and job performance is important information in building a conceptual framework for successful program design. This report provides an orientation to existing information about literacy, or basic skills, and job performance. An overview and analysis of existing information is presented under five headings: defining the issues, predicted changes in the labor market and the labor pool, how management and labor view basic skills training, research about the relationship between basic skills and job performance, and costs of basic skills deficiencies.

In addition to delineating issues in the literature, the monograph contains summaries of selected texts and an extensive bibliography which can prove useful in staff orientation to workplace literacy and in preparation of grant proposals. Interested readers might include practitioners, policy makers, and business/industry/labor leaders who would like a review of published information for gaining a perspective on the issues.

Our additions to the discussion--expressed as comments or questions--are presented in italics at the end of each section. It should be noted that we make no claim to comprehensiveness in the bibliography.

"...poorly educated workers are contributing to the U.S.'s productivity difficulties. One reason the Japanese are achieving higher productivity rates than the U.S. these days is because their workers are better educated," Mr. Lecht argues.

Hymowitz, C. (1981, January 22). Remedial bosses. Employers take over where schools failed to teach the basics. *The Wall Street Journal*, p 1.

"There is a serious problem of basic skills deficiencies among secondary school graduates and non-graduates entering the workforce from the perspective of business...
The deficiencies affect not only the performance of entry-level positions, but also the possibilities for job advancement."

Henry, J. & Raymond, S. (1982). *Basic skills in the U.S. workforce*, p 48. Center for Public Resources.

"An increasing mismatch is developing between jobs and skills... In addition to higher formal training costs, business also pays a high price for increased remediation, increased supervision, increases in errors and decreases in product quality."

National Alliance for Business (1987).*The fourth R: Workforce readiness*. Executive summary, p 2.

Defining the Issues

Newspaper and journal articles document the increasing importance of workplace literacy in maintaining America's productivity and competitiveness. But what do we know about the impact of literacy, or basic skills, on job performance?

In this report we will look at what we know and believe about relationships between basic skills and job performance. First, we will discuss predictions about changes in the labor market and labor pool. Then, we will examine how business and labor view basic skills training and look at research on the relationship between basic skills and job performance. Finally, we will address the question of costs of basic skills deficiencies.

A fundamental problem in analyzing available information is that little consensus exists in defining basic skills. Because we lack a commonly accepted definition, it is difficult to compare results of studies and make generalizations. The term *basic skills* is sometimes defined as the ability to read, write, and compute in a routine manner. By this

definition, nearly all young adults in the United States have the basic skills required for performing simple and routine symbol manipulation tasks.

Leila Gainer, of the American Society for Training and Development, has said "Competitive challenges are driving companies toward employing an array of strategies that require adaptive and innovative workers" with a range of skills including "interpersonal skills... listening skills... the ability to set goals and implement strategies for achieving goals... creativity, and problem-solving skills".[1] Skills that employers find lacking and that concern economic planners are the abilities to size up a situation, make quick and accurate decisions, function effectively in new situations, perform a variety of tasks in an organized fashion, communicate in standard English, and get the point of what is being told or taught. These abilities require and involve higher-order thinking. Traditionally, training in higher-order thinking has been provided in conjunction with the "high literacy" of academic schooling.[2]

Predicted Changes in the Labor Market and the Labor Pool

To meet the demands of a changing economy, it is important to compare current and future characteristics of the labor force and the labor market. Such a comparison should enable us to design strategies to meet changes successfully, with the least human cost and the highest benefit in job satisfaction.

According to demographic predictions, the population growth rate will decrease at the end of the twentieth century leading to reduction in the number of young workers entering the labor market. The 18- to 24-year-old population will decrease during the next decade and the proportion of blacks and Hispanics will increase from 20% in 1985 to 24% in 1994. Larger numbers of women, minorities, and immigrants will enter the workforce comprising 5/6 of the net additions. Since comparatively low educational levels are found among older adults, women, and minorities, in the near future the labor pool will be characterized as having lower levels of literacy than at present. [3,4]

Fewer manufacturing jobs and an increasing number of jobs in the service sector are predicted. International competition, deregulation, and technological changes are likely to affect the structure of work across different industries.[5] Transition periods in which new and old technologies coexist will bring about displacement of some workers and hiring or retraining of others.[6]

Two interpretations of the impact of demographic and economic changes on the labor force emerge. Some authors contend that the general trend will be upgrading jobs; others argue that the trend will be downgrading skill requirements. Evidence for upgraded skill requirements comes from estimates that jobs requiring lower skills will comprise 27% of all new jobs, compared to 40% of current jobs, while 41% of new jobs will require the highest group of skills as compared to only 24% of current jobs. If these estimates are correct, not only will workers need basic skills to prepare for new jobs, but the jobs themselves will place new demands on the workforce for on-the-job learning and problem-solving.[7]

Those who foresee downgrading of skill requirements predict that the labor market is moving toward a polarization of jobs. Some jobs will be simplified so that only minimal skills will be required, while other jobs will require sophisticated knowledge and adaptability. In addition, most new jobs forecasted by the U.S. Department of Labor will require minimal skills.

In 1982 the U.S. Bureau of Labor Statistics forecasted that the greatest number of new jobs in the following decade (between 5 and 7.2 million between 1979 and 1990) will occur in retail and wholesale trade; the vast majority of these jobs do not require advanced skills. For example, approximately 60% of employees in a retail store are in sales or cashier positions. As use of electronic cash registers connected to central computers becomes commonplace, possibilities of error and the skills required are reduced.[8]

Several authors have warned that should a trend toward job polarization intensify, we risk creating a permanent underclass of unskilled workers who have skills necessary for lower-level jobs but insufficient as the basis for training required for more sophisticated jobs. "...Literacy gaps will be a major factor in determining disparities in employment and incomes in the American economy in the future. The existence of large literacy differences between the 'haves' and 'have nots' will adversely affect existing large-income disparities between the economic haves and have nots of our society."[9] For those in low skill jobs, the disparity between currently needed skills and those required for advancement would make job promotion a near impossibility.[10]

A third view is that both downskilling and upskilling are likely to occur. According to this position, international competition, domestic deregulation, and technological changes will have different effects on the nature and structure of work depending on the industry. Therefore, expected changes in skill requirements cannot be generalized across industries.

For example, computerization has caused changes in job demands, but changes in skill requirements depended on the extent and type of computerization. When computers were first introduced, mainframe technology generated a demand for highly specialized personnel. When technology was used later in mass production, skill requirements fell. The introduction of decentralized computing power blurred distinctions between specialized computer personnel and users of computer services. This affected the division of labor. Some of the lower skill level jobs merged or disappeared as skills required for middle level jobs were broadened. Both upskilling and downskilling may occur in sequence as different stages in the use of technology in industry unfold.[11]

Moreover, the question of downskilling or upskilling may be subsumed by a larger change: types of skills required by changing technology and new approaches to organization of work, leading to reformulation and expansion of the worker's role. The way production is organized, the way workers interact, their orientation toward work,

and the nature of their responsibility are all factors that need to be taken into account in predicting job-skill requirements.[12,13]

Finally, we are cautioned not to rely on predictions of future job requirements before addressing current needs. Not only are these predictions contradictory, but researchers are hampered by methodological problems and limitations of existing data bases. Regarding the need for an educated workforce, we already know that serious problems exist and should be resolved.[14]

It is important for literacy providers to be aware of projections of changing labor market conditions and the ability of the workforce to adapt. Projections are useful guides in planning relevant instructional services. As educators involved in helping adults meet real-life needs, our goal is to provide relevant services informed by strategic planning.

We must also consider what may be implied in predicting a growing gap between job skill requirements and labor's ability to fill those requirements. On the one hand, predictions may be used to stimulate concerted and sustained efforts to upgrade basic skills of the workforce. On the other hand, such predictions may be used to justify business flight and pay scale erosions.

If projections of changes in the nature of work and demands placed upon the workforce are given positive attention, a result may be changes in the definition of basic skills. For example, career patterns are changing. In the near future, workers will make an average of ten job changes in a lifetime.[15] Regardless of downgrading or upgrading of specific jobs, workers may need skills that promote effective performance in diverse settings. Two such skills are awareness of abstract principles of organization and "learning to learn." These may be considered basic skills of the future.

How Management and Labor View Basic skills Training

Employers' and managers' attitudes toward basic skills in the workplace vary widely, from unawareness that a problem exists to providing basic skills programs for

employees. [16,17,18] After surveying basic skills instruction provided by a sample of *Fortune 500* companies, Mickulecky and Cousin concluded that individual companies are taking "a somewhat larger role in teaching basic literacy skills to employees (especially if English as a Second Language is considered), but that role is still quite small in terms of industries and individuals involved." Most medium- to large-size businesses provide workers at all levels with job-specific literacy skill instruction, from communications skills for managers to blueprint reading for workers, but relatively few training dollars are spent on basic skills instruction.[19]

Basic skills programs tend to be offered in conjunction with the introduction of new technology and procedures as employers discover that some long-term employees lack the basic skills required to participate in formal training. Larger companies offer in-house programs; smaller companies usually refer employees to offsite community programs. However, although basic skills programs are generally considered to be beneficial to the company and employees, programs are seldom considered to be directly applicable to the company's needs. Employers make a distinction between programs designed to meet business needs and those designed to meet social needs with funding for programs to meet social needs taken from the employee assistance budget rather than the training budget.

Instead of offering programs to increase basic skills attainment, some employers simply reduce literacy demands in the workplace. Employers gear written materials to low reading levels and use pictures and color coding to communicate information. In communities where an applicant pool with adequate basic skills exists, employers may use screening measures to reduce the chances of hiring low-skilled workers. In industries with high turnover rates such as the retailing industry, many employers feel they cannot afford to invest training dollars in remedial instruction of entry-level employees.

Labor unions regard basic skills education as a means to safeguard workers' employability and minimize time spent in seeking new employment after layoffs. Between 1979 and 1984, 11.5 million Americans lost jobs and two million more continue to be laid off each year. Dislocated workers with low literacy levels have difficulty in retraining and reemployment. To protect their membership, unions have entered into collective-bargaining arrangements in which a percentage of payroll dollars is set aside for employee training such as in the United Auto Workers-Ford Motor Company Employee Development and Training Program. Small unions in New York City undertook an innovative approach by pooling their resources to provide basic skills instruction through the Consortium for Worker Literacy,.[20]

The issue of adult literacy has brought together representatives of business and labor to serve on local and statewide adult literacy consortiums. In addition, both business and labor representation on Private Industry Councils is mandated by the Job Training Partnership Act.

Given business's view of basic skills instruction as beneficial to business and employees, why have only a small percentage of training dollars been made available for basic skills instruction? In part, the answer may lie in a "lack of fit" between traditional basic skills instruction and employers' expressed needs. Basic skills instruction, paralleling instruction provided in schools, has focused on a set of generic skills in which content is secondary to skill practice. In addition, no attempt is made to explain how skills should be used in a strategic way to gain control over problem-solving processes used in reading, writing, and math.

A variety of alternative approaches, used in combination, should yield instructional programs to meet the training needs of business. In one approach instruction emphasizes instruction in reasoning and problem-solving strategies used in performing language and math tasks. This type of instruction involves explicit teaching of concepts and language that directly connect basic skills instruction to higher-order skill

training. In a second approach literacy is defined as specific activities conducted to fulfill particular functional purposes in relation to specific domains of knowledge. In this type of instruction, basic skills are taught using actual language, materials, and situations that the learner encounters on the job. Instruction linking job-skill and basic-skill training could benefit both new employees, who would be shown how to use basic skills to acquire job knowledge, and long-term employees, who would be helped to make use of their considerable job knowledge to lessen the effort involved in learning basic skills.

An integrated job-skill and basic-skill program will promote teamwork between management and labor, since successful program development and implementation will depend on joint input and mutual cooperation. Input from both employers and employees is needed to provide an accurate picture of the work environment and nature of job duties. A team approach will also ensure positive rather than punitive consequences of program participation.

The Relationship between Basic Skills and Job Performance

Several studies examining the relationships between basic skills and job performance have been conducted for the military. In order to enlist in the military, applicants have to take a series of tests, including the Armed Forces Qualification Test (AFQT) which scores verbal and mathematical abilities. Researchers have found a strong positive correlation between AFQT scores and scores on the Skill Qualification Test (SQT), which is a measure of job performance. In another study of four military occupations, significant relationships were found between AFQT scores and job performance. However, low AFQT scores were found to affect some jobs more than others.[21] In finding that positive correlations between reading ability and job sample performance translated into only a small percent of variance in job performance, Sticht concluded that "basic skills competence, per se, does not appear to be the overriding determinant of success in the military."[22,23]

Researchers who have examined relationships between job performance and basic skills in civilian jobs have reported contradictory findings. For example, Kulp found that performance of an assembly task decreased significantly when workers' reading skills were more than two grade levels below the difficulty level of instructions. But in a recent study of work performed in a dairy, researchers found "no evidence during [their] stay that any current employee was failing to fulfill his job duties because of inadequate literacy skills."[24]

Major obstacles prevent researchers from estimating productivity gains due to improved literacy skills. Seldom do individual companies estimate direct or indirect costs of employees' basic skills deficiencies. Moreover, when companies do conduct large scale evaluations of the skill level of their employees, assessment results are not made available to the public.

An additional obstacle is the lack of evaluation and follow-up by management of companies that offer basic skills programs. Researchers have found that no systematic evaluation of the impact of literacy programs on productivity was undertaken. At best management relied on informal feedback of supervisors regarding employee performance.[25]

As a result, there are many assumptions about relationships between basic skills attainment and job performance but little documentation. As observed by Mikulecky and Winchester, "it is often assumed, but not documented that literacy requirements increase as one is promoted and moved to positions of higher responsibility. It is also often assumed, but not documented, that superior workers usually have higher literacy abilities than other workers and approach literacy tasks differently."[26]

On the basis of available evidence educators have concluded that there seems to be a relationship between reading, writing, and math abilities and job performance, but the relationship "is by no means overwhelming or direct."[27] After analyzing existing research, Stedman and Kaestle concluded that the ability to gauge job success from

reading skills varies greatly by the type of occupation and is therefore difficult to predict--"the low correlations indicate that percentages of workers with low basic skills can perform jobs competently, even when the jobs are assigned higher levels."[28]

A relationship between basic skills and job performance has been documented in metacognitive aspects of skill attainment--that is, ability to use reading, writing, and computation skills critically. In a study of supervisors, workers, and trainees in an electronics company, Mikulecky and Ehlinger found that metacognitive aspects of literacy are significantly correlated with job performance. Top job performers were better able to identify key concepts, summarize key ideas, and provide details related to these key concepts. They used references but needed to spend less time at such reading and less time listening to others giving them directions. Top performers tended to develop their own sophisticated information retrieval systems.[29]

Much of the present concern about low literacy levels in the workplace is based on the realization that, as a society, we would be ill-advised to maintain the traditional separation between vocational and academic skills. Given the traditional separation between vocational and academic training, it is not surprising that studies of the impact of basic skills on job performance have produced mixed results. Traditionally, there was no perceived relationship between academic and vocational skill, in part, because reading, writing, and math were not required on the job and because reading, writing, and math instruction was not presented to vocationally-directed learners in a way that was job-relevant and mentally stimulating. As we assume instructional approaches in which basic skills are taught as tools to promote job-related knowledge, attitudes, and capabilities, we may expect to see an increase in demonstrated relationships between basic skills and job-skills attainment.

Costs of Basic Skills Deficiencies

Instances of business costs related to basic skills deficiencies have been identified and discussed. Results of a survey conducted by Henry and Raymond indicated that most companies did not estimate direct or indirect costs of employees' basic skills deficiencies. However, employers did rate costs in terms of importance. Employers rated "general productivity" as the highest cost, followed by "additional management/supervision time," "product quality, time and effort spent to increase skills," and finally, "dangers to worker safety."[30]

Business publications have described costly mistakes linked to basic skills deficiencies. Here are two examples:

> At JLG Industries Inc. in Pennsylvania, an employee's inability to read a ruler resulted in wasting $700 worth of steel sheet in one morning. Employees who couldn't feed numbers accurately into electronic equipment bought for inventory and manufacturing schedules forced JLG to spend $1 million to correct errors, thus, wiping out savings expected from the new equipment.
>
> Mutual of New York Insurance Company has encountered serious spelling weaknesses in workers that require 70 percent of their typed correspondence to be redone at least once.
>
> Hymowitz, C. (1981, January 22).
> Remedial bosses. *The Wall Street Journal.*

Basic skills deficiencies may be reflected in training costs. The American Society for Training and Development (ASTD) estimates that about $30 billion is spent annually on formal employee training while informal learning, on the job, costs about $180 billion, adding up to an "astonishing $210 billion per year."[31] Furthermore, Anthony Carnevale, ASTD's chief economist, estimates that "productivity losses caused by poorly educated workers, together with the price of remedial training, costs business about $25 billion a year."[32] David Kearns, Chief Executive Officer of the Xerox Corporation, estimates that "one percent of industry s training costs--roughly two-billion dollars a year--now goes to teaching basic skills."[33] Many companies, however, are reluctant to provide information

on training costs, perhaps because competitors, unions, or stock holders might take issue with the amount spent on training as either too minimal or excessive.[34] Some companies cannot easily assemble the data because they are dispersed in different budgets.

Costs of basic skills training are seldom separated from costs of other types of remedial training. For example, in a 1982 survey by the Center for Public Resources, two companies reported that they each spent $250,000 on remedial training. Another company reported that ten years before the survey it employed one training director at $15,000, but by 1982 it had six full-time, twenty part-time, and several consultant remedial education trainers. The estimated budget in salaries and materials was $250,000.

In a survey of 41 companies that provided basic skills programs, 15 reported their training costs. An average of $1,236 was spent on all training per employee, while an average of $376 was spent on basic education. "Of the $118 million spent by the fifteen companies on all training, just under 3% - or about $3.4 million - was spent on basic education."[35]

Costs of basic skills deficiencies in terms of dangers to worker safety have also been identified by means of case examples. Here is one example. In a lumber camp in Ontario several workers were injured. They had been imitating the illustrations on the safety posters because they were unable to read the safety messages printed underneath the pictures which illustrated what they should not do.[36]

"Safety concerns over workers not being able to read warnings and follow written directions have been issues in a growing number of court cases and have led to several firings at the Westinghouse Electric Corporation defense gear plant in Sunnyvale, California."[37]

Several other costs linked to basic skills deficiencies are increased need for supervision and problems in relationships with co-workers and supervisors. One way to minimize costly mistakes resulting from basic skills deficiencies would be to increase

supervision. It logically follows that prevention of costly mistakes by workers with inadequate basic skills will result in increased cost of supervision.

The ability to function in a team is increasingly recognized as a component of productive work. Several authors have pointed to potential costs in diminished teamwork linked to basic skills deficiencies. Because employees who lack basic skills may be unable to perform certain tasks, they may arouse resentment among their coworkers because they are perceived as not doing their fair share. Coworkers may also resent released time being given to workers who attend basic skills classes especially if they have to take up the slack caused by the absent worker.

In many cases, employees are reluctant to admit their literacy problems for fear of losing their jobs. As a result they may appear secretive, evasive, and unsociable. Other costs to employees with basic skills deficiencies include: difficulty in obtaining employment, low wages, and limited advancement opportunities.

Lost productivity is by far the most generally recognized cost of basic skills deficiency. This is usually discussed in terms of the workforce as a whole and the effect on economic growth of an undereducated workforce rather than in relation to problems of individual companies. For example, in 1983 The Committee for Economic Development reported that over time education and training of the workforce stimulated productivity growth. In 1986 the United States Congress, Office of Technology Assessment reported that lack of basic skills in the workforce "may manifest itself in sluggish productivity growth, increased needs for supervision, and deficient product quality. These costs are difficult to quantify but are probably substantial."[38]

Henry and Raymond summed up the difficulties involved in attempting to document costs of basic skills deficiencies. Quantifying the total costs of the lack of basic skills in employees would be "extremely difficult to derive" since few methodological instruments are available for relating "quantitative productivity loss and other opportunity costs to the educational level" of the workforce. "The relevant causal factors are so varied

and interrelated that quantitative attribution of, for example, productivity decreases to basic skills deficiencies would be extremely difficult".[39] A relatively strong relationship between literacy levels and labor market success among young adults has been documented. The proportion of young men with no employment income grew significantly from the 1970s to the 1980s. In 1973, 7.3% of all 20 to 24-year old males reported no earnings; by 1984, 12% of the same age group had no earnings. These figures reflect the failure of young men with limited education to obtain employment.[40,41]

Level of basic skills attainment can be an important factor in determining income. High school graduates with low scores on a basic skills test were found to earn slightly more than dropouts with similar scores. However, both high school graduates and dropouts with higher levels of skills were found to earn more regardless of race, sex or family background.[41]

Recruiters look for evidence of basic skills attainment and mental abilities in making hiring decisions. In a study of employer hiring decisions, it was found that the three major problems of applicants, as seen by employers, were: 1) poor work habits and ethics, 2) poor job search skills, and 3) poor basic skills attainment.[42] In another study, the following were identified as the three most important assets in getting hired: 1) being serious about work and eager to get a job, 2) being bright and alert, and 3) being courteous and personable.[43] In evaluating the quality of job applications recruiters indirectly examine basic skills proficiency. Employers have developed job-related screening tests that directly assess reading, writing, and math proficiency.

Mental ability is assessed in terms of factors such as attitude, judgment, and ability to work with others. Punctuality, cooperativeness, emotional stability, honesty, dependability, loyalty, and judgment are considered essential not only in getting a job but also in keeping and adjusting to it.

A strong correlation also exists between the educational level of displaced workers and their reemployment experiences. Workers with higher levels of educational

attainment were reported to have significantly shorter periods of joblessness and higher earnings when reemployed than workers with less education.[44] Displaced workers whose former jobs consisted of tasks demanding routine manual and mental skills find it increasingly difficult to obtain new employment in similar jobs or at equivalent levels of pay.

Statistics show that least educated adults suffered most from the decline in real income that occurred between 1973 and 1984, reflecting shrinking job opportunities for workers with low levels of education. Although all males were affected, those with the least education suffered the largest declines. Annual earnings declined by 41.6% for 20 to 24-year-old high school dropouts between 1973 and 1984, while earnings of high school graduates, those with some college, and those with a B.S. or a B.A. declined by 30.1%, 26.1%, and 11.0% respectively.[45]

Whether or not educational credentials actually reflect level of skill achievement or valued personal characteristics, labor market recruiters tend to place great value on certificates and degrees in hiring. Emphasis on credentials in hiring decisions has been shown to be consistent across companies of different size.[46]

It should be noted, however, that despite the emphasis on personal characteristics and educational attainment reported by employers, patterns of discrimination in hiring and compensation continues to be reported. Although educational level is strongly related to getting a better job, how much better seems to depend on one's gender and race.

Basic skills deficiencies are also associated with difficulties in job retention. When automation is introduced in industry, the need for semiskilled and unskilled workers decreases, while the need for maintenance and repair workers increases. In general, workers selected to stay and learn new jobs are those who have higher levels of basic skills, although job retention also depends on other variables such as performance and seniority. General changes in the economy are responsible for overall fluctuations in

employment levels; but, when choices are made at the individual level, those with low educational attainment tend to be most adversely affected.

Some employers have stated that employees' lack of basic skills reduces management's commitment to promote within the firm.[47] A trend away from internal promotion has been observed in the textile industry because of increases in skill demands for technical jobs in plants. Similar trends have been observed in insurance and telephone companies, department stores, and restaurants.[48] However, research has not documented that literacy requirements increase with promotion and positions of higher responsibility. In fact, inadequate basic skills may be only one factor in determining promotability. Promotion is determined by a combination of seniority, personal characteristics, and various performance criteria which may or may not include basic skills.

The question of costs of basic skills deficiencies is complex , since it entails changing notions about jobs and literacy in the context of a changing world economy. Economists and business leaders are concerned that America's workforce obtain education sufficient to remain competitive with European and Japanese workers. It is argued that "to have a world-class economy that can compete with the Europeans and the Japanese in the high value-added products and services that offer high wages, we will need to increase our savings rate and invest in scientific research and development, in new production techniques, and in the education and training of our work force".[49]

Berryman summarized several changes that are occurring in the design of jobs as America's workplace is restructured for increased productivity. One key change "is a shift from mass production to flexible production". Another is the combination of several jobs into one as a result of computerization. Such developments "may require fundamental changes in what all individuals need to learn and how they need to learn it". The key, according to Berryman, is to provide training that enables America's workforce to "deal with uncertainty, understand the firm's market environment, understand the

organizational context in which one's job is embedded, to anticipate, to deal with the unfamiliar and with discontinuity".[50]

There are two profiles of employees with basic skills deficiencies: long term steady workers acculturated to the work environment who are facing demands of retraining and entry-level employees who require acculturation to the world of work. For both groups, it is necessary to achieve connections between the roles of learner and worker.

To meet employer and employee needs for training that enhances productivity, basic skills instruction must promote an integration between "job" learning and "book" learning. Such an understanding will be achieved as basic skills are taught in relation to job content and learners are able to perceive that reasoning and problem-solving skills used in reading, writing, and math are the same skills required to comprehend and produce on the job.

Notes

1. Gainer, L. (1987), pp 8,9.
2. Resnick, L. (1987).
3. Johnston, W. & Packer, A. (1987).
4. Venezky, R., Kaestle, C. & Sum, A. (1987).
5. Bailey, T. & Noyelle, T. (1986).
6. Baldwin, S. (1987).

   Technological change and its consequent labor market change are very difficult to anticipate. This is due to the inherent uncertainty in the innovation process and the fact that the impact of technology on the economy involves customer preferences and relative costs. During transition periods, in which new and old technologies coexist, the following changes affect the labor market: 1) displacement of some workers, 2) hiring or retraining of other workers to use the new technology, and 3) change in the internal organization and behavior of the firm. In Baldwin's view, the ability to adapt to technological changes requires workers to be at least functionally literate, to have the ability to learn.

7. Johnston, W. & Packer, A. (1987).
8. McCord, A. (1983).
9. Venezky, R., Kaestle, C. & Sum, A. (1987), p 51.
10. Bernstein, A., Anderson, R., Zellner, W. & Hammonds, K. (1987, Aug. 10).

    The country is moving into a period of labor scarcity due to a slower population growth. However, this will not mean more employment opportunities for the undereducated and the poor, who are disproportionately black and Hispanic. According to the Census Bureau, 57% of blacks and 49% of Hispanics live in central cities whereas 75% of the new jobs are in the suburbs and often there is no good public transportation linking the two areas. The problem will be aggravated by the widening gap between the skills workers have and the skills they will need to perform their jobs. "Business doesn't want the youths who drop out, even for entry level jobs", says William H. Kolberg, president of the National Alliance for Business.

11. Bailey, T. & Noyelle, T. (1986).
12. Bailey, T. (1988), pp 70-71.

    "... there is no proliferation of low-skill jobs in either the textile and banking industries and indeed there is a shrinkage of lower-levels, unskilled jobs in both industries, although this

trend has been stronger in banking. Nevertheless, it is true that in textiles, many of the tasks previously done by the lower-level workers, particularly the machine operators, require no more skills and in many cases less skill than previously. In this sense it could be argued that there is deskilling in the industry.

But this does not take account of the changes in production organization that are also taking place in many industries. As a result of these changes, for many textile and banking firms, the role of lower level workers has changed in such a way that their jobs are more demanding than they were previously."

13. Berryman, S. (1987).

14. Stedman, L. & Kaestle, C. (1987).

15. Schlossberg, N. (1988).

16. Henry, J. & Raymond, S. (1982).

One of the conclusions of this nationwide survey of businesses, major labor unions, and public educational institutions was that businesses perceive that "there is a serious problem of basic skills deficiencies among secondary school graduates and nongraduates entering the work force" and that these deficiencies affect job performance and opportunities of advancement. Deficiencies in mathematics, reading, and writing were cited as causing loss of time and productivity by many respondents.

17. Lee, C. (1986).

According to Ron Bradley, director of corporate training and development for Blue Cross/Blue Shield, literacy training resulted in lower turnover, improved performance and trainability, and as a consequence, promotability, as well as employee self-confidence motivation and enthusiasm. Ken Dickinson from Ford Motor Co. Development and Training Center stated that basic skills training is not "training designed to teach people their jobs. It's more expansive self-development. The company is obligated to train for its own production needs; this is over and above that. It demonstrates a heavier commitment to the individual" (p 72).

A training manager at a major manufacturer that does not offer basic education for its employees explained that "it boils down to how the company views the issue. And as long as employees' lack of reading abilities does not contribute to, say, a costly lawsuit for the company, we'll maintain the status quo" (p 72). Lloyd David, president of the Continuing Education Institute in Boston, explained that the most difficult part of his job was persuading in-house HRD people that their employees might need basic education. "There are two kinds of people: One group has an idea that there is a problem, but it's not a major issue; the second group never even thought about it" (p 67).

18. Winterbauer, M. (1985), p iv.

    Results of a Literacy 85 survey of thirty businesses in the Saint Paul-Minneapolis area, indicated that "the issue of inadequacy of basic skills competencies in the workforce remains largely an invisible one. Considerable variations in the degree of awareness exist among employers."

19. Mickulecky, L. & Cousin, P. (1982).

20. Business Council for Effective Literacy (1987, October).

21. Armor, D. et al (1982).

22. Sticht, T. (1982), p vii.

23. Sticht, T. (1975).

24. Scribner, S. (1987, Nov.), p 5.

25. Hull, W., Fields, E., & Sechler, J. (1986).

    The authors found that companies did very little follow up of the literacy programs students' subsequent work. One of the companies studied, a computer company, offers a course on statistical process control (SPC) techniques. The total course impact on the corporation is assessed by attempting to measure improved productivity and quality. The measures used are 'changes in labor-ratio', i.e. person hours required to assemble a given product, 'first pass yield ratio', i.e. ratio of products that pass inspection without rework, and 'quality customer satisfaction'. However, the basic skills component of the course is difficult to measure. The other companies studied make no systematic evaluation of the impact of literacy programs on productivity, at best they rely on informal feedback of supervisors on employee performance.

26. Mikulecky, L. & Winchester, D. (1983), p. 1.

27. Sticht, T. & Mikulecky, L. (1984), p. ix.

28. Stedman, L. & Kaestle, C. (1987), p. 39.

29. Mickulecky, L. & Ehlinger (1986).

30. Henry, J. & Raymond, S. (1982).

31. American Society for Training and Development (1986).

32. Carnevale, A. quoted in Simpson, J. C. (1987, Sept. 28).

33. Kearns, D. T. (1986, November 12).

34. Hope, V. (1982).

35. Mark, J. (1984), p. 5.

36. Ritts, M. (1986).

37. Mikulecky, L. & Cousin, P. (1982), p. 29.

38. U.S. Congress, Office of Technology Assessment (1986).

39. Henry, J. & Raymond, S. (1982), p 27.

40. Venezky, R., Kaestle, C. & Sum, A. (1987).

41. Berlin, G. & Sum, A. (1988).

42. Hollenbeck, K. (1984).

43. Peterson, R. (1983).

44. Research and Policy Committee of the Committee for Economic Development (1986).

45. Berlin, G. & Sum, A. (1988).

46. Malizzio, A. & Whitney, D.(1984).

47. Winterbauer, M.(1985).

48. Bailey, T. (1988), p. 72.

> "Since World War II, many industries, including textiles, have relied on internal training and promotion to fill many of their skilled positions. Over the last five years, there have been growing indications that there is a trend away from this traditional pattern of promotion. The banking industry as well as case studies of the insurance, telephone, department store and restaurant industries suggest that firms have been reducing their long-term commitment to workers, reducing internal job ladders and increasing the number of ports of entry to which access is determined by educational credentials, and relying more on short-term and part-time workers at lower levels and specialized professionals at more skilled levels.
>
> In the textile industry, as well, there are serious problems with the traditional system of internal promotion in the textile industry. These result primarily from the increases in skill requirements for technical jobs in plants. Thus, it is much more difficult for industry's traditional unskilled workforce to acquire the skills for those jobs entirely through informal on-the-job training."

49. Berlin, G. & Sum, A. (1988), p. 20.

50. Berryman, S. (1988, January 14), p. 2, 1, 7.

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